

REMARKS

Applicants have studied the Office Action dated December 15, 2003 and have made amendments to the claims. It is submitted that the application, as amended, is in condition for allowance. By virtue of this amendment, claims 1-8 and 12, 14, 17-23 are pending. Claims 13, 15, 16 and 24 have been canceled without prejudice. Reconsideration and allowance of the pending claims in view of the above amendments and the following remarks are respectfully requested. In the Office Action, the Examiner:

- Objected to the drawings under 37 CFR 1.83(a);
- Objected to Claims 3, 12, 17 and 20 because of informalities;
- Rejected claims 3, 8, 12, and 18 under 35 U.S.C. § 112 as being indefinite;
- Rejected claims 1-3, 5 and 7 under 35 U.S.C. § 102(b) as being anticipated by Inou (Inou) (U.S. Patent No. 5,793,461);
- Rejected claims 1 and 2 under 35 U.S.C. § 103(a) as being unpatentable over Sakai et al. (Sakai) (U.S. Patent No. 6,222,603) in view of Chern et al. (Chern) (U.S. Patent 4,401,537);
- Rejected claims 6 and 8 under 35 U.S.C. § 103(a) as being unpatentable over Inou (Inou) (U.S. Patent No. 5,793,461) in view of Volkmann et al. (Volkmann) (U.S. Patent 4,931,125);
- Rejected claims 12, 15, 16, 17 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Inou (Inou) (U.S. Patent No. 5,793,461) in view of Ishihara et al. (Ishihara) (U.S. Patent 5,263,888);
- Rejected claims 13, 18 and 22 under 35 U.S.C. § 103(a) as being unpatentable over Inou (Inou) (U.S. Patent No. 5,793,461) in view of Ishihara and further in view of Volkmann et al. (Volkmann) (U.S. Patent 4,931,125);
- Rejected claim 19 under 35 U.S.C. § 103(a) as being unpatentable over Inou (Inou) (U.S. Patent No. 5,793,461) in view of Ishihara and further in view of Tsubota et al. (Tsubota) (U.S. Patent No. 5,677,749);

- Indicated claim 4 would be allowable if rewritten in independent form; and
- Indicated claims 14, 23, and 24 would be allowable if rewritten in proper dependent form and amended to overcome the rejections under 35 U.S.C. § 112;

Allowable Subject Matter

Applicants wish to thank Examiner Landau for indicating the allowable subject matter of claims 4, 14, 23 and 24.

Applicants have amended claims 4 and 23 so as to be in independent form and include all of the limitations of their base claim and any intervening claims. Applicants have further amended claim 4 to correct a grammatical error and provide proper antecedent basis. Applicants have further amended claim 23 so as to alternatively include the limitation of claim 24, which was also indicated as allowable subject matter. No new matter has been added and Applicants respectfully assert that these amended independent claims are in condition for allowance. Claims 4 and 23 as now presented contains only those limitations of originally filed claims 4 and 23. Therefore, this amendment does not narrow the scope of claims 4 and 23 within the meaning of *Festo*¹.

In The Drawings

As noted above, the Examiner objected to the drawings under 37 CFR 1.83(a) as not showing every feature of the claimed invention. Applicants are providing a new drawing, FIG. 4, to address this objection. The new drawing is a processing flow diagram illustrating the processing steps for the claimed methods. The following table indicates example support in the originally filed specification for each processing step illustrated in the new FIG. 4. No new matter has been added by this new figure:

¹ Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd., No. 00-1543 (122 S. Ct. 1831; 2002 U.S. LEXIS 3818; 62 U.S.P.Q.2D (BNA) 1705)(Decided May 28, 2002).

STEP NUMBER	EXAMPLE SPECIFICATION SUPPORT
402	Page 6, Lines 9-10
404	FIG. 3, Page 8, lines 14-16
406	Page 6, line 24 through page 7, line 3
408	Page 6 lines 24-26
410	Page 6, line 26 through page 7, line 3
412	Page 8, lines 17-21; page 7, lines 7-11

In The Specification

Applicants have amended the specification to include a description of the new figure, FIG. 4. This amendment to the specification is simply a description of the figure and each step illustrated in the new figure. Example support in the originally filed specification for each of the steps described in this new description is provided above in the remarks regarding the new figure. No new matter has been added by this amendment.

Overview of the Present Invention

The present invention is directed to a process and system for joining two substrates to form a panel using a laser to cure a non-epoxy sealant used in joining those two substrates. Laser light is used to promote the polymerization of the sealant in a timely fashion, while not causing a harmful temperature rise in the adjacent glue seal.

Claim Objections and Rejections Under 35 U.S.C. §112 and further Claim Amendments

As indicated above the Examiner rejected claims 3, 8, 12, and 18 under 35 U.S.C. § 112 and objected to claims 3, 12, 17 and 20. Applicants have amended these claims as follows.

Applicants have amended claims 3, 8, 12, 17, and 20 as suggested by the Examiner in the present office action. No new matter has been added.

Claim 3 has been further amended to restate the “near normal” limitation to be “substantially normal.” Applicants respectfully assert that a limitation of “substantially normal” does not render the claim indefinite. See, MPEP, § 2173.05(b) and *Andrew Corp. v. Gabriel Electronics*, 847 F.2d 819, 6 USPQ2d 2010 (Fed. Cir. 1988). Support for this amendment is found in the specification at, for example, page 6, line 26. No new matter has been added.

Claim 8 has been amended to depend from claim 6, as was considered for the purposes of examination.

Claim 12 has been further amended by deleting the limitation “wherein the non-epoxy glue sealant is applied using an ODF method.” No new matter has been added.

Claim 18 has been amended to clarify the description of laser as being a “Nd:YLF frequency tripled” laser instead of the originally specified “Q-Peak™” laser. Support for this amendment is found in the specification at, for example, page 7, line 24.

Rejections Under 35 U.S.C. §102 as being Anticipated by Inou

As indicated above, the Examiner Rejected claims 1-3, 5 and 7 under 35 U.S.C. § 102(b) as being anticipated by Inou (Inou) (U.S. Patent No. 5,793,461). Applicants have amended independent claim 1 to distinguish over the cited references.

Applicants have amended independent claim 1 to further describe the laser beam as “the laser beam consisting of one of a continuous wave laser, a pulsed laser with a pulse duration greater than 21 ns, and a pulsed laser with a pulse duration less than 19 ns.” Although the Examiner has cited prior art that is asserted to render the use of a Continuous wave (CW) laser obvious, Applicants respectfully traverse that assertion.

With regards to the use of a CW laser, the Examiner cited Volkmann as teaching “a CW laser 10 (column 11, lines 28-30) to cure an adhesive bonding two substrates.” Office Action, Page 7, fourth paragraph. Applicants respectfully traverse this assertion.

To begin, the Volkmann reference is directed to a method for adhesive bonding with pretreatment of components. Volkmann, title. The teachings of Volkmann do not include the use of a laser to cure an adhesive in any way. The Volkmann reference only teaches using lasers to pretreat surfaces that are to be secured with a thermally cured adhesive. Volkmann teaches pretreatment by the laser “to form projections on the non-metallic substrate of the first body, the projections formed by evaporation of the non-metallic substrate of the first body.” Volkmann, column 2, lines 5-7. The “energy beam source” i.e., the laser, of Volkmann, has several specified criteria. The energy beam source must be capable of producing an extremely high energy density at the surface to be treated. For this invention, the critical parameter is “absorbed energy rather than incident energy.” Volkmann then specifies “the second criterion is that the absorbed energy must be converted into sufficient thermal energy to vaporize the non-metallic substrate itself to form projections ... on the non-metallic substrate ... by evaporation of the non-metallic substrate.” Volkmann, column 4, line 67 to column 5, line 17 (emphasis added). The CW laser cited by the Examiner is used “to form projections on the glass substrate, the projections formed by evaporation of the glass substrate.” Volkmann, Column 11, lines 37-38 (emphasis added).

Furthermore, the laser 10 in FIG. 1 of Volkmann is shown to direct a beam through various optical elements to a body 30. Body 30 is described in the specification as “the sample surface 30 to be treated.” Volkmann continues “[T]he body to be pretreated 30 is disposed on a sample translation stage.” Volkmann, Column 4, lines 2-7. Body 30 is therefore clearly a body whose surface is being pretreated prior to application of an adhesive.

The adhesives used in the teachings of Volkmann are thermally cured adhesives. No mention of the use of any type of laser in the curing of these adhesives is made by Volkmann. Volkmann teaches adhesives that work in that invention include “those which are rapidly curable at elevated temperatures and especially adapted for use on automotive assembly lines[.]” Volkmann, column 8, lines 29-31. The example within Volkmann that uses a CW laser to pretreat surfaces describes that the system with the CW laser “is used to laser treat 1X4X1/8 inch panels of plate glass...” Volkmann then

goes on to describe that the laser treated panels are bonded together with an adhesive. Volkmann, Column 11, lines 43-49. No laser treatment of the adhesive is discussed or suggested.

Furthermore, the primary reference, Inou, itself teaches away from the use of a long pulse width laser. Inou notes that its laser “emits a pulse wise beam ... with a periodic time up to 20 ns to irradiate a myriad of light quantum having a wave length of 351 nm to the seal 8 in a very short time (20 ns).” Inou, Column 6, lines 41-44. Inou notes that “unlike the method to irradiate the light quantum for a long time by irradiating an ultraviolet ray from a general ultraviolet ray source....” “The molecules thus excited accelerate not only the photopolymerization between resins, but also the chemical reaction between the seal 8 and the substrates 4-5. Thus, the bond between the seal 8 and the substrates 4-5 becomes stronger than by irradiating the ultraviolet ray from the general ultraviolet-ray source.” Inou, column 6, lines 45-54 (emphasis added). Applicants respectfully assert that prior art that teaches away from the claimed is per se demonstration of lack of *prima facie* obviousness².

Applicants further assert that modification of the Volkmann reference, which is directed to using lasers to pretreat surfaces prior to applying an adhesive, to the curing of the adhesive itself, as is claimed for the present invention, destroys the intent, purpose and function of the Volkmann reference and leads to an inoperable system. The Federal Circuit has consistently held that when a §103 rejection is based upon a modification of a reference that destroys the intent, purpose or function of the invention disclosed in the reference, such as proposed modification is not proper and the *prima facie* case of obviousness can not be properly made. See *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

Furthermore, the application of the teachings of Volkmann to treat a surface leads to an inoperable system since, as claimed by amended independent claim 1, the light is directed “onto one of the first or the second substrate that is at least partially

² See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

transparent to the laser beam[.]”

With regards to a pulsed laser, Applicants have amended independent claim 1 to encompass “a pulsed laser with a pulse duration greater than 21 ns, and a pulsed laser with a pulse duration less than 19 ns. The Inou reference teaches using a pulsed laser with a pulse duration of 20 ns. Inou, column 6, lines 41-44. Applicants respectfully assert that the prior art of record, taken alone or in combination with one another, does not teach, suggest or make obvious the use of pulse durations outside of the range disclosed in Inou.

For at least the above reasons, amended independent claim 1 distinguishes over the prior art of record. Applicants respectfully assert that the rejection of claim 1 under 35 U.S.C. § 102(b) should be withdrawn.

Dependent claims 2-3, 5 and 7 depend from amended claim 1. As discussed above for the rejections under 35 U.S.C. § 102(b), amended independent claim 1 distinguishes over the prior art of record. Dependent claims 2-3, 5 and 7 therefore include all of the limitations of claim 1 and distinguish over the prior art of record. Applicants therefore respectfully submit that the rejection of claims 2-3, 5 and 7 should also be withdrawn.

**Rejections Under 35 U.S.C. §103(a) as being Unpatentable over
Sakai in view of Chern**

As indicated above, the Examiner rejected claims 1 and 2 under 35 U.S.C. § 103(a) as being unpatentable over Sakai in view of Chern. The Examiner goes on to combine Sakai and Chern³. The Examiner recites 35 U.S.C. §103. The Statute expressly requires that obviousness or non-obviousness be determined for the claimed subject matter “as a whole,” and the key to proper determination of the differences between the prior art and the present invention is giving full recognition to the invention “as a whole.”

³ Applicants make no statement whether such combination is even proper

As discussed above for the rejections under 35 U.S.C. § 102(b), independent claim 1 has been amended to distinguish over the prior art of record. Dependent claim 2 depends from claim 1 and therefore includes all of the limitations thereof. Applicants therefore respectfully submit that the rejection of claims 1 and 2 should be withdrawn.

**Rejections Under 35 U.S.C. §103(a) as being Unpatentable over
Inou in view of Volkmann**

As indicated above, the Examiner rejected claims 6 and 8 under 35 U.S.C. § 103(a) as being unpatentable over Inou in view of Volkmann. The Examiner goes on to combine Inou and Volkmann.⁴ The Examiner recites 35 U.S.C. §103. The Statute expressly requires that obviousness or non-obviousness be determined for the claimed subject matter "as a whole," and the key to proper determination of the differences between the prior art and the present invention is giving full recognition to the invention "as a whole." As discussed above with regards to amended claim 1 and the rejections under 35 U.S.C. § 102(b), the prior art of record, taken alone or in combination with one another, does not teach, suggest or make obvious the use of a CW laser as is claimed by amended claims 6 and 8.

In addition to the above remarks, claims 6 and 8 depend, either directly or indirectly, from amended claim 1. As discussed above for the rejections under 35 U.S.C. § 102(b), amended independent claim 1 distinguishes over the prior art of record. Dependent claims 6 and 8 therefore include all of the limitations of claim 1 and distinguish over the prior art of record. Applicants therefore respectfully submit that the rejection of claims 6 and 8 should be withdrawn.

**Rejections Under 35 U.S.C. §103(a) as being Unpatentable over Inou in view of
Ishihara**

As indicated above, the Examiner rejected claims 12, 15, 16, 17 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Inou in view of Ishihara. The Examiner

⁴ Applicants make no statement whether such combination is even proper.

goes on to combine Inou and Ishihara⁵. The Examiner recites 35 U.S.C. §103. The Statute expressly requires that obviousness or non-obviousness be determined for the claimed subject matter "as a whole," and the key to proper determination of the differences between the prior art and the present invention is giving full recognition to the invention "as a whole."

Applicants have canceled claims 15 and 16 without prejudice, thereby making rejection of those claims moot.

Claims 12, 17 and 21 depend, either directly or indirectly, from amended claim 1. As discussed above for the rejections under 35 U.S.C. § 102(b), amended independent claim 1 distinguishes over the prior art of record. Dependent claims 12, 17 and 21 therefore include all of the limitations of claim 1 and distinguish over the prior art of record. Applicants therefore respectfully submit that the rejection of claims 12, 17 and 21 should be withdrawn.

**Rejections Under 35 U.S.C. §103(a) as being Unpatentable over Inou in view of
Ishihara and further in view of Volkmann**

As indicated above, the Examiner rejected claims 13, 18 and 22 under 35 U.S.C. § 103(a) as being unpatentable over Inou in view of Ishihara and further in view of Volkmann. The Examiner goes on to combine Inou, Ishihara and Volkmann⁶. The Examiner recites 35 U.S.C. §103. The Statute expressly requires that obviousness or non-obviousness be determined for the claimed subject matter "as a whole," and the key to proper determination of the differences between the prior art and the present invention is giving full recognition to the invention "as a whole."

Applicants have canceled dependent claim 13 without prejudice, thereby rendering the rejection of claim 13 moot.

⁵ Applicants make no statement whether such combination is even proper.

⁶ Applicants make no statement whether such combination is even proper.

Applicants have amended claim 18 to more accurately describe the laser as a "Nd:YLF frequency tripled pulsed laser." The use of an Nd:YLF laser in the method of the present invention is not taught, anticipated or made obvious by the prior art of record taken either alone or in combination with one another. For at least those reasons, Applicants assert that claim 18 distinguishes over the prior art of record.

With regards to claim 22, Applicants assert that as was discussed above with respect to amended independent claim 1 and for the rejections under 35 U.S.C. § 102(b), the use of a continuous (CW) laser in the method of the presently claimed invention is not taught, anticipated or made obvious by the prior art of record taken either alone or in combination with one another. For at least those reasons, Applicants assert that claim 22 distinguishes over the prior art of record.

In addition to the above remarks, claims 18 and 22 depend, either directly or indirectly, from amended claim 1. As discussed above for the rejections under 35 U.S.C. § 102(b), amended independent claim 1 distinguishes over the prior art of record. Dependent claims 18 and 22 therefore include all of the limitations of claim 1 and distinguish over the prior art of record. Applicants therefore respectfully submit that the rejection of claims 18 and 22 should be withdrawn.

**Rejections Under 35 U.S.C. §103(a) as being Unpatentable over
Inou in view of Ishihara and further in view of Tsubota**

As indicated above, the Examiner rejected claim 19 under 35 U.S.C. § 103(a) as being unpatentable over Inou in view of Ishihara and further in view of Tsubota. The Examiner goes on to combine Inou, Ishihara and Tsubota⁷. The Examiner recites 35 U.S.C. §103. The Statute expressly requires that obviousness or non-obviousness be determined for the claimed subject matter "as a whole," and the key to proper determination of the differences between the prior art and the present invention is giving full recognition to the invention "as a whole."

⁷ Applicants make no statement whether such combination is even proper.

Dependent claim 19 depends, from claim 12, which depends from amended claim 1. As discussed above for the rejections under 35 U.S.C. § 102(b), amended independent claim 1 distinguishes over the prior art of record. Therefore, dependent claim 19 includes all of the limitations of claim 1 and distinguishes over the prior art of record. Applicants therefore respectfully submit that the rejection of claim 19 should be withdrawn.

CONCLUSION

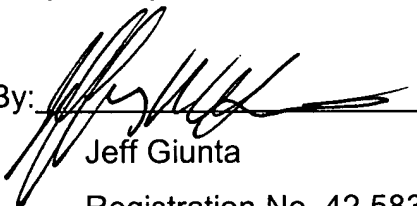
In this Response, Applicants have amended certain claims. In light of the Office Action, Applicants believe many of these amendments serve a useful clarification purpose, and are desirable for clarification purposes, independent of patentability. Accordingly, Applicants respectfully submit that those claim amendments do not limit the range of any permissible equivalents.

Applicants acknowledge the continuing duty of candor and good faith in the disclosure of information known to be material to the examination of this application. In accordance with 37 CFR §1.56, all such information is dutifully made of record. The foreseeable equivalents of any territory surrendered by amendment are limited to the territory taught by the information of record. No other territory afforded by the doctrine of equivalents is knowingly surrendered and everything else is unforeseeable at the time of this amendment by the Applicants and their attorneys.

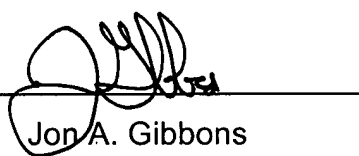
If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is invited to call the undersigned attorney at (561) 989-9811 should the Examiner believe a telephone interview would advance the prosecution of the application.

Respectfully submitted,

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